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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/593,670	04/24/2007	William T.H. Chang	U 016494-3	2796

140 7590 11/03/2009

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EXAMINER
KENNEDY, NICOLETTA

ART UNIT	PAPER NUMBER
1611	

NOTIFICATION DATE	DELIVERY MODE
11/03/2009	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/593,670	CHANG ET AL.	
	Examiner	Art Unit	
	Nicoletta Kennedy	1611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *9/20/06*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-21* is/are rejected.

7)☒ Claim(s) *9-10* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *9/20/06*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Status of Claims

Claims 1-21 are currently pending.

Priority

This application, filed September 20, 2006, is a national stage entry of PCT/US2004/008768 filed March 23, 2004.

Claim Objections

1. Claim 9 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. The claims fails to further limit the average particle size of the chitosan content from claim 8, upon which it depends.

2. Claim 10 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. The claims fails to further limit the average particle size of the chitosan content from claim 9, upon which it depends.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-4, 15 and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Sekigawa et al. (US 5,217,720).

Regarding claims 1 and 15, Sekigawa et al. teach a coated solid medicament comprising coating a core solid medicament form with a chitosan (abstract) and then filling a hard capsule made from gelatin with the coated medicament (column 6, lines 2-6).

Regarding claims 2-4, Sekigawa et al. teach that the chitosan may have a degree of deacetylation of 98% (column 7, lines 33-34).

Regarding claim 20, Sekigawa et al. teach that the medicament form contains salicylamide as a therapeutically active ingredient (a health-enhancing component).

Sekigawa et al. therefore anticipate claims 1-4, 15 and 20.

3. Claims 1and 15 are rejected under 35 U.S.C. 102(e) as being anticipated by Kudo et al. (US 6,972,132) (filed Dec. 10, 2001).

Regarding claims 1 and 15, Kudo et al. teach a soft capsule produced by adding chitosan as the polymer and arar and gelatin, both listed by Applicants as edible gums (column 12, lines 37-43 and instant claim 15).

Kudo et al. therefore anticipate claims 1 and 15.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 1 and 5-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sekigawa et al. (US 5,217,720) in view of Hashimoto et al. (US 5,474,989) (Dec. 12, 1995).

Regarding claim 1, Sekigawa et al. teach a coated solid medicament comprising coating a core solid medicament form with a chitosan (abstract) and then filling a hard capsule made from gelatin with the coated medicament (column 6, lines 2-6). However, Sekigawa et al. fail to teach the molecular weight of the chitosan. Hashimoto et al. cure this deficiency.

Regarding claims 5-6, Hashimoto et al. teach a drug composition in which the solubility and the dissolution rate of a drug having low water solubility are improved by incorporated therein a low molecular weight chitosan with a molecular weight in the range from 500 to 50,000 (abstract).

It would have been prima facie obvious to a person of ordinary skill in the art at the time of the invention to have combined the teachings of Sekigawa et al. with those of Hashimoto et al. to use a low molecular weight chitosan in the capsule coating. One would have been motivated to do so because Hashimoto et al. teach that using low molecular weight chitosan improves bioabsorptivity and biouptake of an encapsulated drug (abstract and column 4, line 59).

8. Claims 5-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sekigawa et al. (US 5,217,720) in view of Hashimoto et al. (US 5,474,989) (Dec. 12,

1995) as applied to claims 5-6 above, and further in view of Cardinal et al. (US 4,895,724) (Jan. 23, 1990).

Regarding claims 5-6, the combination of Sekigawa et al. and Hashimoto et al. teach a drug composition in which the solubility and the dissolution rate of a drug having low water solubility are improved by incorporated therein a low molecular weight chitosan with a molecular weight in the range from 500 to 50,000 (abstract). However, they fail to teach that the molecular weight may be above 50,000 or the average particle size for the chitosan. Cardinal et al. cures this deficiencies.

Regarding claims 5-8, Cardinal et al. teach a composition for the controlled and prolonged release of macromolecular molecules comprising a porous matrix of chitosan having dispersed therein the macromolecular compound. Cardinal et al. teach that the molecular weight of the chitosan typically ranges from about 50,000 to about 4 million (column 2, lines 54-55).

It would have been prima facie obvious to a person of ordinary skill in the art at the time of the invention to have combined the teachings of Sekigawa et al. and Hashimoto et al. with those of Cardinal et al. to use a chitosan not restricted to a low molecular weight to deliver a macromolecular drug. One would have been motivated to do so because Hashimoto et al. teach that using low molecular weight chitosan improves bioabsorptivity and biouptake of an encapsulated drug (abstract and column 4, line 59) but does not address larger (macromolecular) drug delivery. Cardinal et al. teach that a chitosan film or matrix may be used to control drug release, specifically by adjusting the degree of crosslinking and channel diameter (column 3, lines 4-11).

Regarding claim 8-10, Cardinal et al. teach that the chitosan is passed through a 40 mesh sieve and resulted in a 40/100 mesh particle size range (column 8, lines 51-54).

9. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sekigawa et al. (US 5,217,720) in view of Hashimoto et al. (US 5,474,989) (Dec. 12, 1995) and Cardinal et al. (US 4,895,724) (Jan. 23, 1990) as applied to claims 5-8 above, and further in view of Frechet et al. (US 2002/0123609) (Sept. 5, 2002).

The combination of Sekigawa et al., Hashimoto et al. and Cardinal et al. teach each limitation of claims 5-8 relating to the use of chitosan and gelatin in the delivery of macromolecules but do not teach that sodium alginate may be used as a substitute for gelatin. Frechet et al. cure this deficiency.

Frechet et al. teach that for oral delivery of capsules, sodium alginate, gelatin or agar may be used as excipients (para. 0182).

It would have been prima facie obvious to a person of ordinary skill in the art at the time of the invention to have combined the teachings of Sekigawa et al. and Hashimoto et al. and Cardinal et al. with those of Frechet et al. to use sodium alginate as an excipient to deliver a macromolecular drug. One would have been motivated to do so because sodium alginate is a known substitute for agar or gelatin (Frechet et al., para. 0182).

10. Claims 1, 11-12, 17-18 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kudo et al. (US 6,972,132).

Regarding claim 1, Kudo et al. teach a soft capsule produced by adding chitosan as the polymer and agar and gelatin, both listed by Applicants as edible gums (column 12, lines 37-43 and instant claim 15).

Regarding claims 11-12, Kudo et al. teach that the chitosan content (referred to as <B> by Kudo et al.) may be contained from 10 to 99% based on the dry weight (column 7, lines 47-54). Kudo et al. do not teach the wet weight of the composition but it would have been within the purview of one of ordinary skill in the art to have adjusted the amount of water added, thus adjusting the wet weight percent of the chitosan. MPEP 2144.05 states that "[i]n the case where the claimed ranges 'overlap or lie inside ranges disclosed by the prior art' a *prima facie* case of obviousness exists" quoting *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976). In the instant case, the claimed ranges overlap the range taught by Kudo et al. and are therefore prima facie obvious.

It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made to have combined the teachings of Kudo et al. to adjust the amount of water in the composition, thereby adjusting the wet weight percent of chitosan. One would have been motivated to do so because Kudo et al. teach that differing amounts of water may be added to the composition, resulting in a different wet weight percent of chitosan.

Regarding claims 17-18, Kudo et al. teach that the dry weight of the agar and gelatin is not less than 5% (column 19, lines 45-48). Kudo et al. do not teach the wet

weight of the composition but it would have been within the purview of one of ordinary skill in the art to have adjusted the amount of water added, thus adjusting the wet weight percent of the edible gel. Kudo et al. teach that the amount of water added may range from 50 mililiters to 100 mililiters (column 20, examples 1 and 3). Additionally, MPEP 2144.05 states that "where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation" quoting *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). In the instant case, the general conditions of the claims are disclosed and adjusting the amount of water is not inventive.

Regarding claim 21, Kudo et al. teach the same structural invention as the instant invention as claimed in instant claim 1. MPEP 2112 states that "the discovery of a previously unappreciated property of a prior art composition, or of a scientific explanation for the prior art's functioning, does not render the old composition patentably new to the discoverer" quoting *Atlas Powder Co. v. Ireco Inc.*, 190 F.3d 1342, 1347, 51 USPQ2d 1943, 1947 (Fed. Cir. 1999). Thus the claiming of a new use, new function or unknown property which is inherently present in the prior art does not necessarily make the claim patentable. *In re Best*, 562 F.2d 1252, 1254, 195 USPQ 430, 433 (CCPA 1977). . The capsule produced by Kudo et al. has the same structure as that of instant claim 1 and would be expected to effectively reduce the mouth-puckering taste of chitosan.

11. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sekigawa et al. (US 5,217,720) in view of Hashimoto et al. (US 5,474,989) (Dec. 12, 1995) as applied to claims 1 and 5-6 above, and further in view of Bailly et al. (US 6,030,953) (Feb. 29, 2000).

Although the combination of Sekigawa et al. and Hashimoto et al. teach each limitation of claim 1 and that the chitosan may be a chitosan derivative, they fail to teach that the derivative is a C_8-C_{18} N-alkyl or C_8-C_{18} N-alkanoyl chitosan. Bailly et al. cure this deficiency.

Regarding claims 13-14, Bailly et al. teach an orally administrable pharmaceutical composition comprising at least one compound selected from the group

consisting of chitosan, its derivatives and salts thereof (abstract). Specifically, chitosan hydrochloride may be used as a pharmaceutically acceptable salt of chitosan (column 2, lines 20-24) and the chitosan derivative may be a C_6-C_{18} N-alkyl or N-alkanoyl chain (column 2, lines 15-20).

It would have been prima facie obvious to a person of ordinary skill in the art at the time of the invention to have combined the teachings of Sekigawa et al. and Hashimoto et al. with those of Bailly et al. to use a chitosan salt or derivative. One would have been motivated to do so because Hashimoto et al. specifically state that a chitosan derivative may be used.

12. Claim 19 rejected under 35 U.S.C. 103(a) as being unpatentable over Kudo et al. (US 6,972,132) as applied to claims 1, 11-12, 17-18 and 21 above, and further in view of Bolton et al. (US 4,814,178) (Mar. 21, 1989).

Kudo et al. teach a soft capsule produced by adding chitosan as the polymer and agar and gelatin, both listed by Applicants as edible gums (column 12, lines 37-43 and instant claim 15). The soft capsule is comprised of agar and gelatin at not less than 5% (column 19, lines 45-48). However, Kudo et al. fail to teach the substitution of Konjac gum for agar. Bolton et al. cure this deficiency.

Bolton et al. teach sustained release tablets comprising gelling agents including konjac gum and agar (column 4, lines 1-10). Further, Bolton et al. teach that the concentration of the gelling agent is about 2 to 6.5% by weight (column 4, lines 9-10). MPEP 2144.05 states that “[i]n the case where the claimed ranges ‘overlap or lie inside

ranges disclosed by the prior art' a *prima facie* case of obviousness exists" quoting *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976). In the instant case, the claimed range overlaps the range taught by Bolton et al. and is therefore prima facie obvious.

It would have been prima facie obvious to a person of ordinary skill in the art at the time of the invention to have combined the teachings of Kudo et al. with those of Bolton et al. to use Konjac gum as a gelling agent in an oral therapeutic dosage form. One would have been motivated to do so because Konjac gum is a known substitute for agar (Bolton et al., column 4, lines 1-10).

Conclusion

No claims are allowable.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nicoletta Kennedy whose telephone number is (571)270-1343. The examiner can normally be reached on Monday through Thursday 8:15 to 6:45.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sharmila Gollamudi Landau can be reached on 571-272-0614. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/N. K./
Examiner, Art Unit 1611

/David J Blanchard/
Primary Examiner, Art Unit 1643